Memorandum

To: *Diane Salkie, EPA Region 2*
Elizabeth Franklin, USACE

From: *Troy Gallagher, CDM Smith*

Date: *December 13, 2019*

Subject: *Summary of Oversight of Chemical Water Column Monitoring*
October 21–22, 2019
Lower Passaic River Restoration Project

On behalf of the United States Environmental Protection Agency (EPA) and the United States Army Corps of Engineers (USACE), Kansas City District, CDM Federal Programs Corporation (CDM Smith) traveled to the Lower Passaic River Study Area (LPRSA) on Monday, October 21 through Tuesday, October 22, 2019 and provided field technical oversight for the fifth round of surface water sampling associated with the Chemical Water Column Monitoring (CWCM) program.

Water sampling was conducted at 5 different locations along the Lower Passaic River at the following river mile (RM) locations: RM 8.4, RM 10.2, RM 12.0, RM 13.5, and RM 15.8. Only one sample was collected from RM 15.8 from a mid-depth of the river. For the remaining four locations, two samples were collected from each location, one from the top of the RM location approximately 3 feet below the surface, and the second from the bottom, approximately 2 feet above the river bottom; samples were collected during both flood and ebb tides from each river mile station. Samples were collected using a peristaltic pump to pump water directly into the sample containers. Water quality parameters were collected, and a vertical profile was performed both before and after samples were collected. Field activities were conducted by Ocean Surveys, Inc. (OSI) and AECOM on behalf of the Cooperating Parties Group (CPG). Anchor QEA provided field support on behalf of the CPG. Split samples were collected by CDM Smith on October 22, 2019.

The fixed point monitoring locations are presented in Figure 1 from the CPG's quality assurance project plan (QAPP). Oversight was conducted in accordance with CDM Smith's Final QAPP for CWCM, dated September 3, 2019. Photographs of field activities are presented in Attachment 1. A copy of the field logbook notes is provided in Attachment 2. A copy of the sample tracking log is provided in Attachment 3.

Summary of Monday, October 21, 2019 Field Activities

Personnel in Attendance

Troy Gallagher – CDM Smith
Alexandra Allen – OSI
James Roth – AECOM
Clare Murphy-Hagan – AECOM
Mike Tatarelli – AECOM
Chris Pelrah – Anchor QEA

All personnel met at the 1 Madison Street boat dock in Rutherford, New Jersey. OSI and AECOM rode in OSI's boat, which was equipped with equipment for sampling. Anchor QEA and CDM Smith were aboard a separate oversight boat captained by Chris Pelrah.

All personnel mobilized to RM 12.0 to begin collecting the samples during the ebb tide. Upon arrival to RM 12.0, YSI water quality parameters were recorded by AECOM personnel, and sample containers were labeled to prepare for collection. A vertical profile of water quality parameters was taken before sample collection as well. The peristaltic pump was turned on, and sample collection began from the bottom of RM 12.0. After all sample containers were filled, the YSI was raised and the tubing was replaced to begin collection from the top of the river. The water quality parameters were recorded, and then the sample collection began. A vertical profile of water quality parameters was collected, and water quality parameters were recorded after sample collection to complete sampling activities at this location. Both boats mobilized back to the dock to wait for the flood tide window.

Once the flood tide window had begun, all personnel mobilized to RM 12.0 to begin collecting the samples during the flood tide. AECOM recorded water quality parameters from the YSI, and sample containers were labeled to prepare for collection; OSI collected a vertical profile of water quality parameters before sample collection as well. The peristaltic pump was turned on, and sample collection began from the bottom of the RM 12.0 location. After all sample containers were filled, the YSI was raised and tubing was replaced to begin collection from the top of the river. In addition to the samples collected from the surface from RM 12.0, AECOM also collected a field duplicate sample. A final vertical profile of water quality parameters was collected, and the water quality parameters were recorded. Coolers were swapped between the two boats before departing to the next location.

All personnel mobilized to RM 13.5 to begin collecting the samples during the flood tide. AECOM recorded water quality parameters from the YSI, and sample containers were labeled to prepare for collection; OSI collected a vertical profile of water quality parameters before sample collection as well. The peristaltic pump was turned on, and sample collection began from the bottom of the RM 13.5 location. After all sample containers were filled, the YSI was raised and tubing was replaced to begin collection from the top of the river. A final vertical profile of water quality parameters was collected,

and the last water quality parameters were recorded. Both boats mobilized back to the 1 Madison Street dock to wait for the final ebb tide window of the day.

The crew waited on shore until the tide in the river changed so the collection of the ebb tide samples could begin. Once the ebb tide had begun, the OSI boat mobilized to RM 15.8 to begin preparations for sampling. OSI collected a vertical profile of water quality parameters and AECOM recorded the water quality parameters and labeled bottleware. Samples were collected from a mid-depth point at RM 15.8 during the ebb tide. A final vertical profile of water quality parameters was collected. The boat departed RM 15.8 to perform ebb tide sampling at RM 13.5

All personnel mobilized to RM 13.5 to begin collecting the samples during the ebb tide. OSI collected a vertical profile of water quality parameters and AECOM recorded the water quality parameters and labeled bottleware. Samples were collected from the bottom of RM 13.5 during the ebb tide. The YSI was then raised to the surface, and the tubing was replaced. Water quality parameters were collected, and samples were collected from the surface of RM 13.5. A final vertical profile of water quality parameters was collected to conclude the sampling activities for this day. Both boats mobilized back to the dock to unload coolers and prepare samples for shipment, and to secure the boats for the evening.

Summary of Tuesday, October 22, 2019 Field Activities

Personnel in Attendance

Troy Gallagher – CDM Smith
Alexandra Allen – OSI
James Roth – OSI
Clare Murphy-Hagan – AECOM
Mike Tatarelli – AECOM
Chris Pelrah – Anchor QEA

All personnel met at the 1 Madison Street boat dock in Rutherford, New Jersey. OSI and AECOM rode in OSI's boat, which was equipped with equipment for sampling. Anchor QEA and CDM Smith rode in a support boat for observation and oversight.

All personnel mobilized to RM 10.2 to begin collecting the samples during the ebb tide. AECOM recorded water quality parameters from the YSI, and sample containers were labeled to prepare for collection. A vertical profile of water quality parameters was collected before sample collection as well. The peristaltic pump was turned on, and sample collection began from the bottom of the RM 10.2 location. After all sample containers were filled, the YSI was raised and tubing was replaced to prepare for collection from the top of the river. The water quality parameters were recorded, and then the sample collection began. A final vertical profile of water quality parameters was collected to finish up sampling activities at RM 10.2.

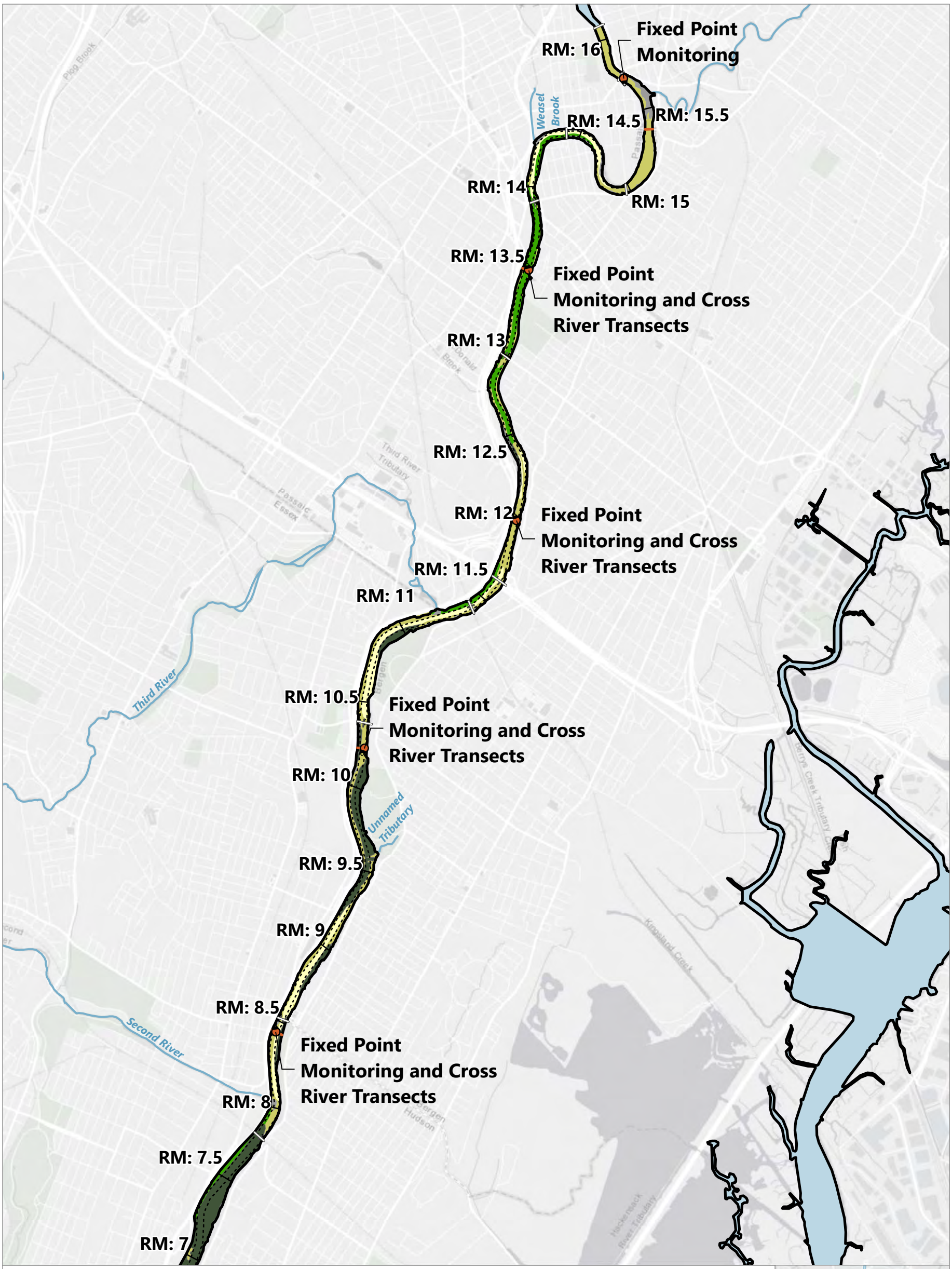
All personnel mobilized to RM 8.4 to begin collecting the samples during the ebb tide. AECOM recorded water quality parameters from the YSI, and sample containers were labeled to prepare for collection. A vertical profile of water quality parameters was collected before sample collection as well. The peristaltic pump was turned on, and sample collection began from the bottom of the RM 8.4 location. After all sample containers were filled, the YSI was raised and tubing was replaced to begin collection from the top of the river. The water quality parameters were recorded, and then the sample collection began. A final vertical profile of water quality parameters was collected to finish up sampling activities at RM 8.4. Both boats mobilized back to the Madison Street dock to await the flood tide.

Once the flood tide window opened, all personnel mobilized to RM 8.4 to begin collecting the samples during the flood tide. AECOM recorded water quality parameters from the YSI, and sample containers were labeled to prepare for collection. A vertical profile of water quality parameters was collected before sample collection as well. The peristaltic pump was turned on, and sample collection began from the bottom of the RM 8.4 location. After all sample containers were filled, the YSI was raised and tubing was replaced to begin collection from the top of the river. The water quality parameters were recorded, and then the sample collection began. CDM Smith collected a split sample and a field duplicate sample from the top of RM 8.4 with the sample identification 19R-CE02-T084-AS-CDM and 19R-CE02-T084-AS-CDM-100, respectively. A final vertical profile of water quality parameters was collected to finish up sampling activities at RM 8.4. Both boats then mobilized to RM 10.2.

All personnel mobilized to RM 10.2 to begin collecting the samples during the flood tide. AECOM recorded water quality parameters from the YSI, and sample containers were labeled to prepare for collection. A vertical profile of water quality parameters was collected before sample collection as well. The peristaltic pump was turned on, and sample collection began from the bottom of the RM 10.2 location. After all sample containers were filled, the YSI was raised and tubing was replaced to prepare for collection from the top of the river. The water quality parameters were recorded, and then the sample collection began. A final vertical profile of water quality parameters was collected to finish up sampling activities at RM 10.2. This completed all sample collection for the fifth round of the CWCM. Both boats mobilized back to the dock.

After arriving back on shore, Troy Gallagher packed all of the split sample containers in coolers and prepared them for shipment through FedEx. Surface water samples were sent to SGS AXYS laboratory to be analyzed for pesticides, PCBs, PAHs, and dioxin/furans; Katahdin Analytical Services was sent surface water samples to be analyzed for TOC, POC, TSS, total and dissolved metals, and total and dissolved mercury. Four coolers were dropped off at FedEx for overnight delivery.

Figure 1

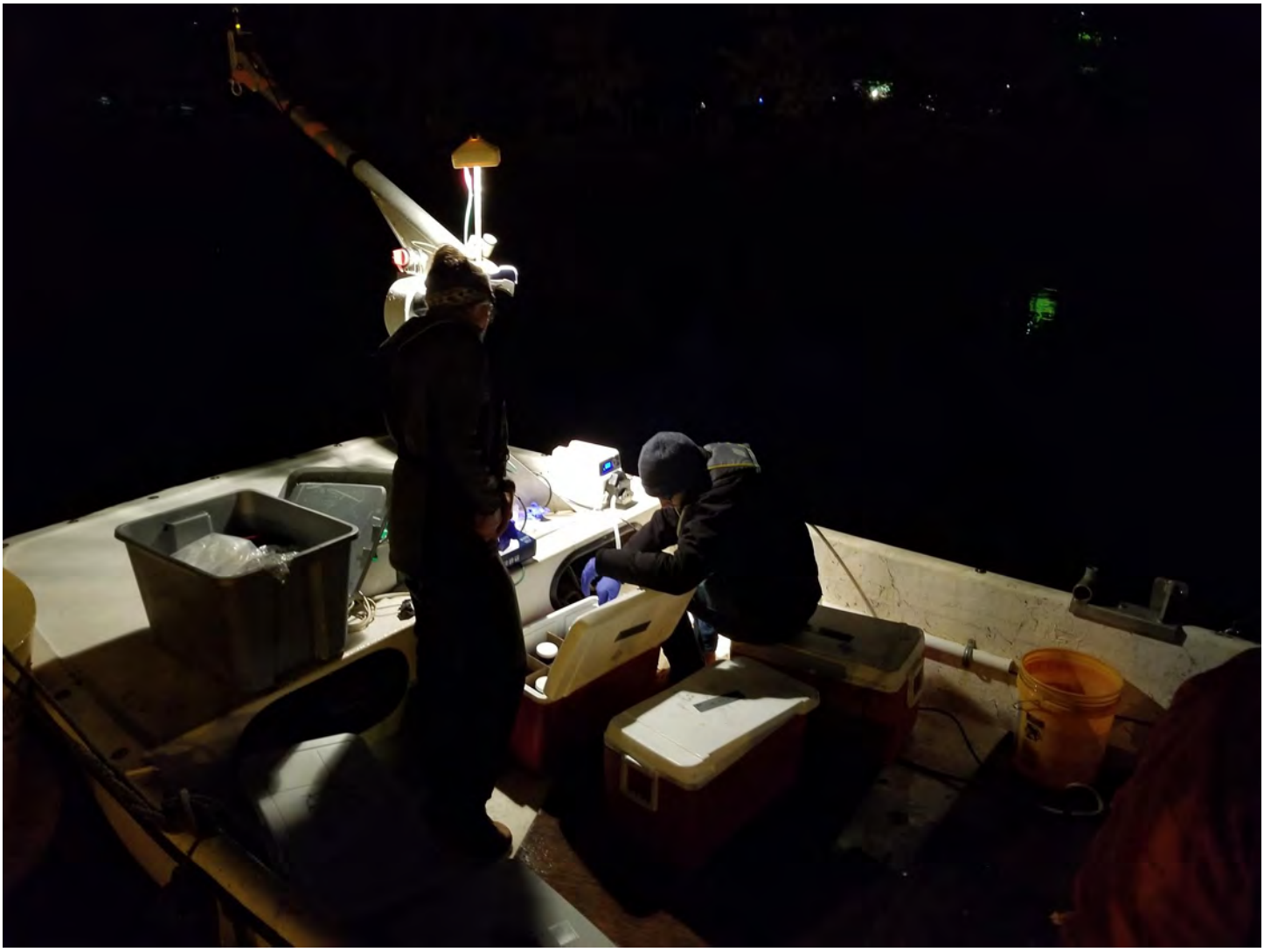


Publish Date: 2019/05/21, 10:59 AM | User: dbaker
Filepath: \\Boston1\jobs\Passaic_CPG\DOCUMENTS\2019\Current_Conditions_Physical_WC_QAPP\source\RM7.8_to_DD_Map_monitoring_locations_FullExtent.mxd

Figure 1
Current Conditions Monitoring Locations
Field Sampling Plan Addendum
Current Conditions Monitoring Program - Physical Water Column Monitoring
Lower Passaic River Restoration Project

Attachment 1

Photographs of Field Activities



Photograph 1: AECOM collecting samples via peristaltic pump at RM 12.0.

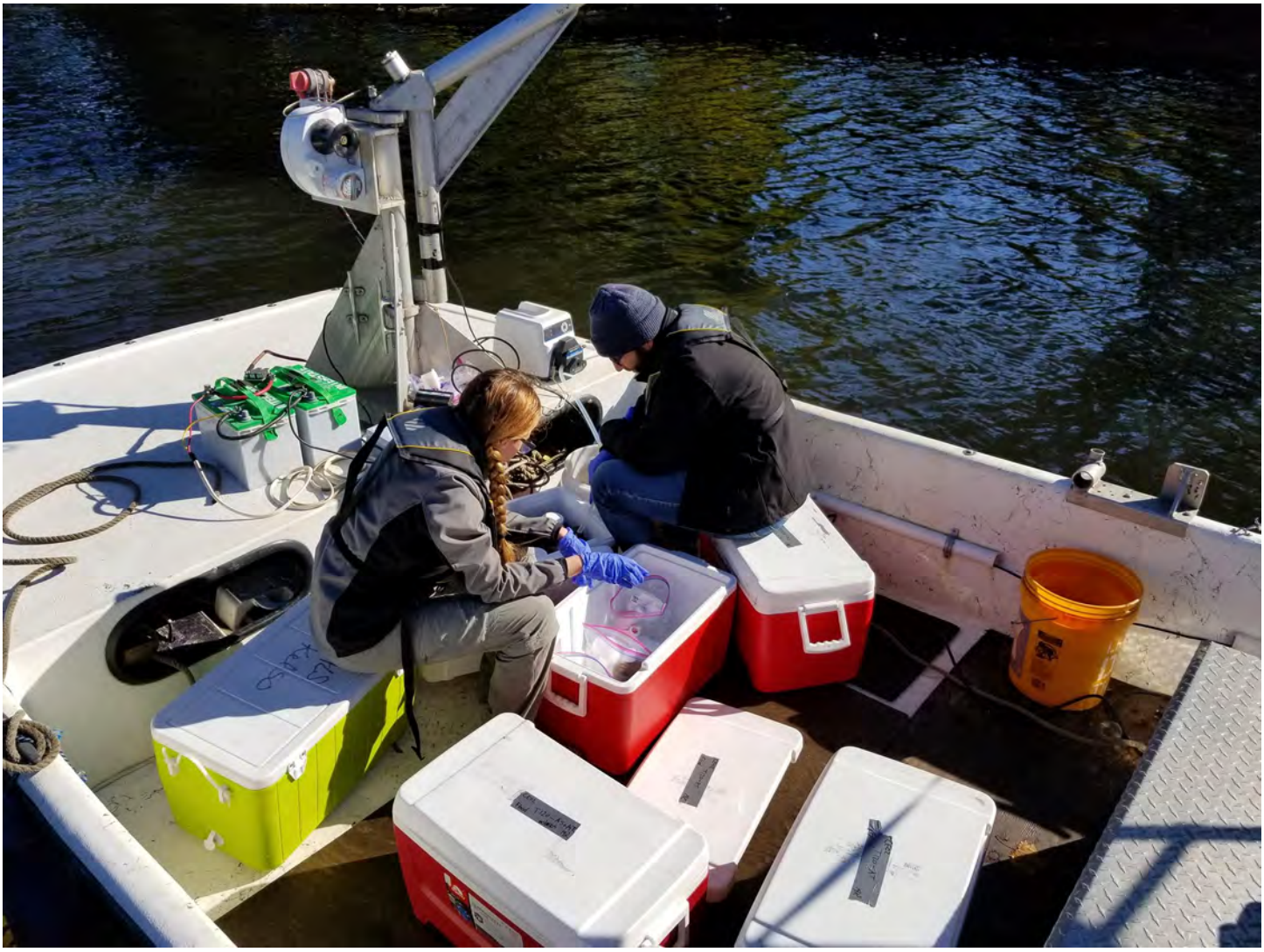
10/21/2019

Photograph 2: OSI connecting the tubing to the YSI to prepare for sampling.

10/21/2019

Photograph 3: OSI performing a vertical profile while AECOM prepares bottleware for sampling.

10/21/2019



Photograph 4: Collection of samples from RM 12.0.

10/21/2019

Photograph 5: OSI crew setting up YSI and tubing for sampling and vertical profile.

10/21/2019

Photograph 6: AECOM collecting filtered samples at RM 8.4.

10/21/2019

Photograph 7: AECOM labeling sample containers before collecting samples at RM 13.5.

10/21/2019

Photograph 8: AECOM using clean hands method to collect low level mercury samples from RM 15.8.

10/21/2019

Photograph 9: OSI performing the vertical profile at RM 15.8.

10/21/2019

Photograph 10: OSI holding YSI off side of boat while AECOM labels sample containers for collection.

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Photograph 11: OSI performing vertical profile off the side of the boat during a light rain.

10/22/2019

Photograph 12: AECOM labeling bottleware in preparation for sampling.

10/22/2019

Photograph 13: AECOM using clean hands method to collect samples from 10.2.

10/22/2019

Attachment 2

Field Logbook

Location Rutherford NJ Date 10/21/19

Project / Client LPR / USACE

Diamond Alkali 004 / CWCM

5[00] TG onsite.

Weather: 60°F, partly cloudy

PPE: Level D, PFD

Purpose: Oversight of CWCM sampling.

5[15] TG waiting onshore for AECOM personell to arrive on site.

5[30] H+S meeting. Depart dock + head to RM 12.0. Will sample from 3 tide windows today. Catching end of ebb tide in AM.

6[00] Arrive @ RM 12.0, ebb tide.

6[10] Vertical profile collected, water quality parameters recorded.

6[15] Begin collection of samples from bottom of RM 12.0, ebb

6[25] WQ parameters recorded. YSI raised and tubing replaced. YSI tied up on surface.

6[35] Sample collection from the top of RM 12.0, ebb.

6[50] YSI pulled out. WQ parameters taken. Final vertical profile performed. Both boats depart back to dock.

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Location Rutherford, NJ Date 10/21/19

Project / Client LPR/USACE

Diamond Alkali 004 / CWCM

7[15] Back at dock. Waiting until next tide window to continue sampling.

9[30] TG waiting in car at dock for crew to arrive, came back from breakfast.

9[45] Meet on dock, go over plan ahead for sampling this tide window
* Crew is Alexanda Allen + James Roth (OSI), Mike Tatarelli + Clare Murphy-Hagan (AECOM) and Chris Pelrah (Anchor QEA).

10[00] Depart dock and head downstream

10[15] Arrive @ RM 12.0 for flood tide sampling. OSI preps tubing and AECOM labels bottleware.

10[20] Vertical profile collected. YSI hung at bottom of river. WQ parameters collected.

10[30] Samples collected from the bottom of RM 12.0, flood tide.

10[40] YSI raised, tubing replaced. WQ parameters recorded. Set up YSI at surface for collection.

10[50] Samples collected from surface @ RM 12.0, flood tide. Duplicate

10-21-19

Rite in the Rain

Location Rutherford, NJ Date 10/21/19

Project / Client LPR / USACE

Diamond Alkali OU4 / CWCM

sample collected from the surface location here.

11[20] WQ parameters collected. Final vertical profile performed. Coolers swapped between boats to prepare for next sampling @ RM 13.5.

11[35] Arrive at RM 13.5. OSI sets up tubing and AECOM labels bottleware.

11[40] Vertical profile performed. WQ parameters recorded. YSI + tubing at bottom ready for sampling.

11[50] Samples collected from bottom of RM 13.5, flood tide.

12[00] WQ parameters taken, YSI raised and tubing replaced. YSI + tubing set up @ surface.

12[10] Samples collected from top of RM 13.5, flood tide.

12[25] WQ parameters taken and final vertical profile taken. Both boats head to dock to unload and wait for next tide window. TG will prepare bottles and paperwork for tomorrows sampling

10-21-19

Location Rutherford, NJ Date 10/21/19

Project / Client LPR / USACE

Diamond Alkali OU4 / CWCM

15[45] TG back onsite. Waiting for AECOM crew to arrive and begin loading up. Will sample RM 15.8 first during this tide window, ebb tide

16[00] Meet up with both crews on dock and prepare for departure.

16[15] Depart dock and head to RM 15.8

16[35] Arrive @ RM 15.8. Wait for tide window to open.

17[00] Setting up tubing and labeling bottleware. 1 sample to be collected from mid-depth.

17[05] Vertical profile performed. WQ parameters recorded. YSI tied off.

17[15] Samples collected from mid-depth location at RM 15.8, ebb tide

17[30] WQ parameters recorded and final vertical profile taken. Both boats swap coolers and head to RM 13.5

17[45] Arrive @ RM 13.5. Prep tubing and label bottles. Vertical profile performed, WQ parameters taken.

10-21-19

Location Rutherford NJ Date 10/21/19

Project / Client LPR / USACE

Diamond Alkali OU4 / CWCM

18[00] Samples collected from bottom of RM 13.5, ebb,

18[10] Raise YSI and change tubing. Hang YSI at surface. WQ parameters taken.

18[20] Samples collected from top of RM 13.5, ebb tide

18[35] WQ parameters taken. Final vertical profile performed. Both boats back to dock.

19[00] TG offsite

10/21/19

Location Rutherford, NJ Date 10/22/19

Project / Client LPR / USACE

Diamond Alkali OU4 / CWCM

4[45] TG arrive onsite. AECOM + OSI loading up boats.

Weather: 55°F, partly cloudy

PPE: Level D

Purpose: Completion of oversight of CWCM event, and collection of split.

5[00] Head on dock and prepare to head out for ebb window.

5[10] H+S meeting. Same staff onsite as yesterday. Depart dock + head to RM 10.2

5[35] Arrive at RM 10.2. Hooking up equipment, setting up YSI + tubing

5[45] Perform vertical profile, and take WQ parameters.

5[55] Samples collected from bottom at RM 10.2, ebb tide

6[05] YSI raised and tubing replaced. WQ parameters taken.

6[10] Samples collected from top of RM 10.2, ebb tide.

6[30] WQ parameters taken and final vertical profile performed. Boats mobilize to RM 8.4.

10-22-19

Location Rutherford NJ Date 10/22/19

Project / Client LPR / USACE

Diamond Alkali OU4 / CWCM

650	Arrive at RM 8.4. Vertical profile taken. WQ parameters taken. Tubing attached to YSI
705	Samples collected from bottom of RM 8.4, ebb tide.
715	Raise YSI and replace tubing. Take WQ parameters. Tie off YSI for surface sampling
725	Samples collected from surface at RM 8.4, ebb tide
740	WQ parameters recorded. Final vertical profile taken. Both boats head back to dock.
815	Back at dock. Crew will wait for next tide window. TG will set up coolers and prepare bottles for split collection. Split sample is planning to be collected @ RM 8.4.
1030	TG onsite packing coolers for sample collection. Begins to rain.
1100	Depart dock and head to RM 8.4. Will take split @ surface.

10-22-19

Location Rutherford, NJ Date 10/22/19

Project / Client LPR / USACE

Diamond Alkali OU4 / CWCM

1130	Arrive @ RM 8.4. Setting up tubing Perform vertical profile and take WQ parameters.
1145	Samples collected from bottom of RM 8.4, flood tide.
1200	Raise YSI and change tubing. Take WQ parameters.
1215	Samples collected from top of RM 8.4, flood. CDM Smith will take split from here. 19R-CE02-T084-AS-CDM 19R-CE02-T084-AS-CDM-100 "100" sample is the duplicate field sample.
1245	WQ parameters and final vertical profile taken. Both boats head up to RM 10.2
1305	Arrive @ RM 10.2. Set up YSI and tubing, perform vertical profile. WQ parameters taken.
1315	Samples collected from bottom of RM 10.2, flood tide.
1325	Raise YSI and change tubing. WQ parameters recorded.

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Location Rutherford, NJ Date 10/22/19

Project / Client LPR / USACE

Diamond Alkali 004 / CWCM

1330 Samples collected from top of RM 10.2, flood tide.

1350 WQ parameters and final vertical profile taken. Both boats head back to dock to unload.

1420 Back @ dock.

1515 TG offsite to print labels + pack coolers for shipment.

1740 TG done packing coolers. Heads to FedEx to drop off samples.

1815 Coolers dropped off. TG done for day. Will send lab emails about shipment tonight

10/22/19

Location Date

Project / Client

Attachment 3

Sample Tracking Log

CWCM #5

SAMPLE TRACKING LOG

Trace VOC LAB: _____ INORGANIC CLP LAB: _____

CLP CASE NO: _____ ORGANIC CLP LAB: _____ SUBCONTRACT LAB: Katahdin

SAMPLE ID	SAMPLE DATE	SAMPLE TIME	MATRIX	DEPTH (feet)	Trace VOC CLP NO.	ORGANIC CLP NO.	INORGANIC CLP NO.	SUBCONTRACT ANALYSIS	QA/QC
19R-CE02-T084 -AS-CDM	10/22/19	1210	SW	A	-	-	-	SSC, POC/DOC, TAL metals, Total Hg	MS/MSD
19R-CE02-T084 -AS-CDM-100	10/22/19	1210	SW	A	-	-	-	↓	Duplicate

ANALYSIS SUMMARY: SSC- suspended solid concentration, POC/DOC- particulate organic carbon/ dissolved organic carbon, TAL Metals- Total + dissolved metals, Total Hg- Total & dissolved mercury

CWCM # 5

SAMPLE TRACKING LOG

Trace VOC LAB: _____ INORGANIC CLP LAB: _____

CLP CASE NO: _____ ORGANIC CLP LAB: _____ SUBCONTRACT LAB: SGS AXYS

SAMPLE ID	SAMPLE DATE	SAMPLE TIME	MATRIX	DEPTH (feet)	Trace VOC CLP NO.	ORGANIC CLP NO.	INORGANIC CLP NO.	SUBCONTRACT ANALYSIS	QA/QC
19R-CE02-T084-AS-CDM	10/22/19	1210	SW	A	-	-	-	PCBs, D/F, Pest, PAHs	MS/MSD
19R-CE02-T084-AS-CDM-100	10/22/19	1210	SW	A	-	-	-	↓	Duplicate

ANALYSIS SUMMARY: D/F - Dioxin/Furans, PCBs - polychlorinated biphenyls, PAH - polycyclic aromatic hydrocarbons, Pest - organochlorine pesticides.